

# North Sapphire Elk Research Project

## Progress Report - Spring 2015

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Montana Fish, Wildlife and Parks (MFWP), in collaboration with Ecosystem Research Group and the MPG Ranch, initiated a 2-year elk research project in the North Sapphire Mountains with the goal of better understanding elk movements in this area. In February 2014, MFWP, assisted by a contract capture team, captured, sampled, and radiocollared 45 adult female and 20 bull elk. The research team is monitoring elk movements and survival. Efforts to evaluate elk habitat in this area began in May 2014. This report summarizes the work conducted to date and preliminary findings.

### **Project Background**

About 1,000 elk inhabit the Northern Sapphire Mountains and Bitterroot Valley south of Missoula, providing hunting and wildlife viewing opportunities to the residents of the Bitterroot and Missoula Valleys, to Montanans from beyond the immediate region, and to out-of-state visitors. This area includes Hunting District (HD) 204 and the north portions of HD 261 and 240. These elk herds typically move from higher elevation summer ranges on public and corporate timber lands to lower elevation winter ranges, most of which are on private land. In recent years, this migratory behavior may have changed, and elk may be spending increasing amounts of time on privately-owned portions of the winter range. This extended valley habitation may be undesirable to landowners trying to manage forage for domestic livestock and to hunters searching for elk on public lands. The goal of the project is to collect baseline information regarding public and landowner opinions towards elk management and baseline information regarding elk movements in the northern Sapphire area. MFWP will use this information to identify and develop effective responses to management challenges within the hunter and private landowner communities of the Northern Sapphire Range.

### **Elk Monitoring and Survival**

We deployed GPS radiocollars on 65 elk (20 bulls, 45 adult females) during February 2014. We programmed radiocollars to collect a location every two hours for a two-year period. Of the 20 bulls radiocollared, 1 collar released early and there were 9 bull mortalities in 2014. Five of the 19 radiocollared bulls were harvested during the 2014 hunting season (2 during archery season, 3 during rifle season). Hunters harvested 2 radiocollared bull elk on publicly-accessible land and 3 in areas that

restricted public access. Three bull elk died as a result of wounding loss during the 2014 hunting seasons (1 during archery season, 2 during rifle season). One bull elk died of unknown causes on December 5. Three bull elk have collars that are not transmitting, and the fate of these elk is unknown. In 2014, there were 5 adult female mortalities and 1 early collar release. Hunters harvested 2 of 44 female elk during the 2014 hunting seasons (1 during rifle season, 1 during a late-season damage hunt). Both of these harvests occurred in areas that restricted public access. One female elk died as a result of wounding during archery season, 1 was struck by a vehicle on December 26 on Highway 93, and 1 died of unknown causes on December 1.

	Bulls	Cows
Archery	2	0
Rifle	3	1
Wounding	3	1
Late Season	0	1
Vehicle	0	1
Unknown	1	1
Total	9	5

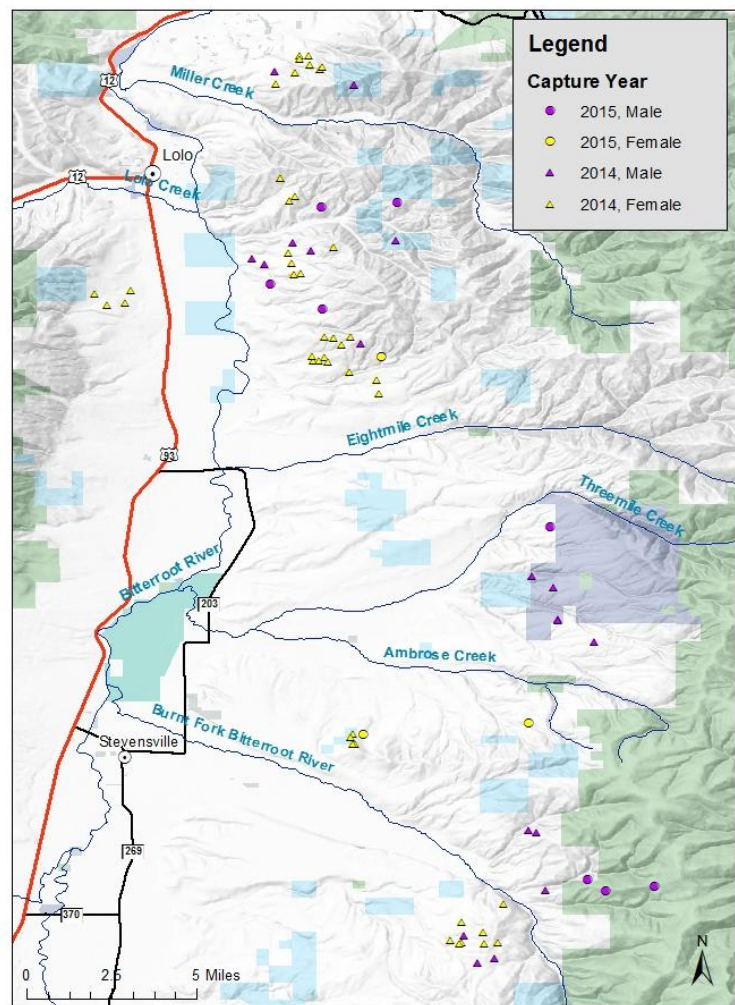
**Table 1. The causes of mortality for radiocollared elk during February 2014 – April 2015.**

We retrieved 11 functional radiocollars from 2014 mortalities, and redeployed these 11 radiocollars on new elk during February 2015 (8 bulls, 3 adult females, Figure 1). We are currently monitoring 57 radiocollared elk deployed on 42 adult female and 15 bull elk.

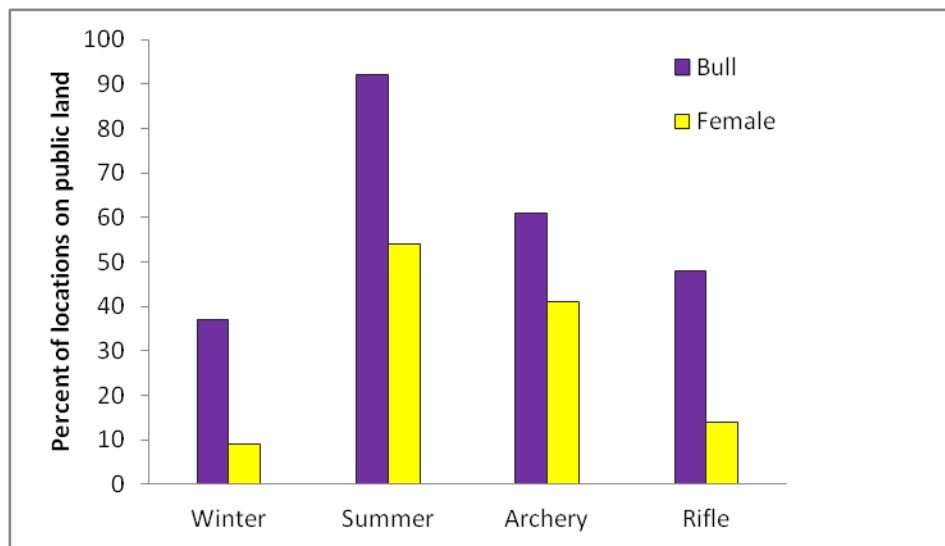
### **Elk Movements**

During spring 2014, 69% (24 of 35) of adult female elk and 95% (18 of 19) of bull elk migrated to summer ranges. The other 31% of females and 5% of bulls remained resident on lower elevation winter ranges throughout the year. We considered elk resident if their summer range included the same areas as their winter range.

During winter 2014 (February – April), the majority of both adult female (91%) and bull (63%) locations occurred on private lands (Figure 2). During summer (June – August), 54% of female elk locations and 92 percent of radiocollared bull locations occurred on publicly accessible lands. During archery season, 41% of female and 61% of bull locations occurred on publicly accessible lands. During rifle season, 14% of female locations and 48% of bull locations occurred on publically accessible lands.



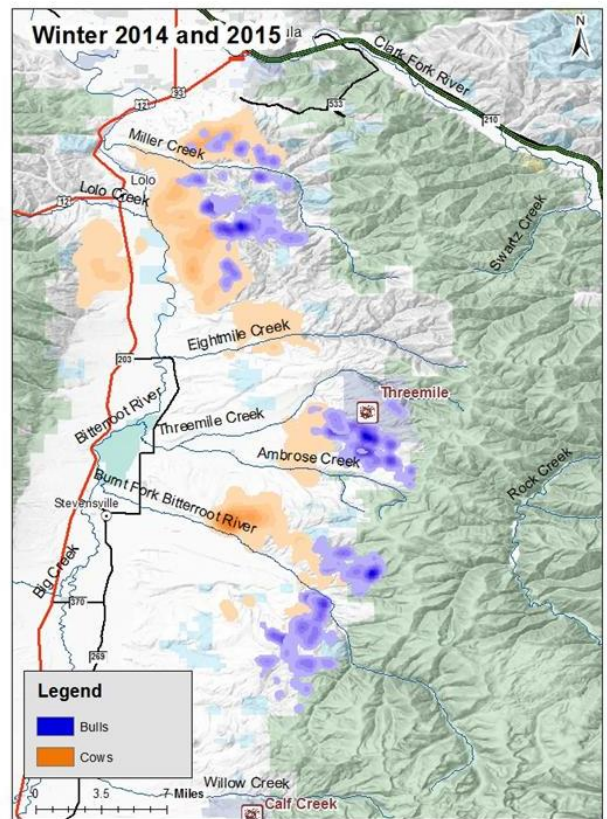
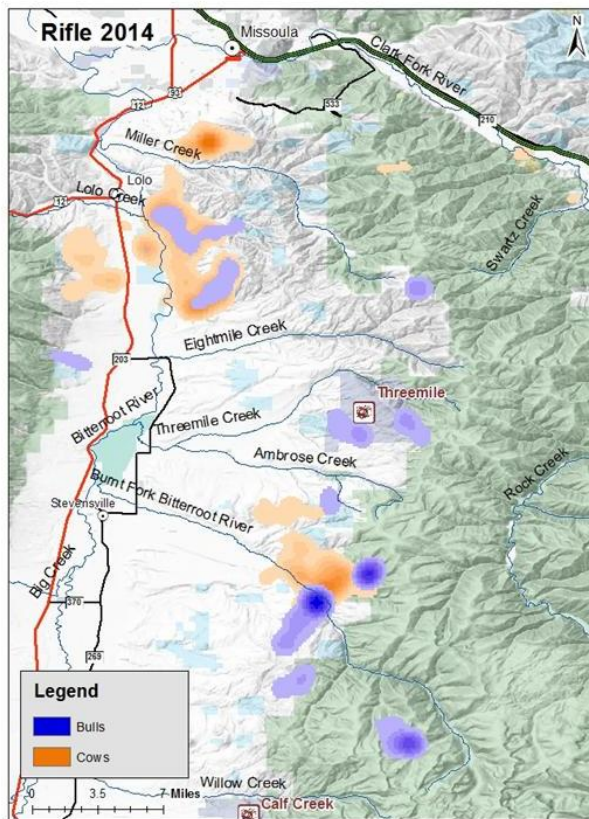
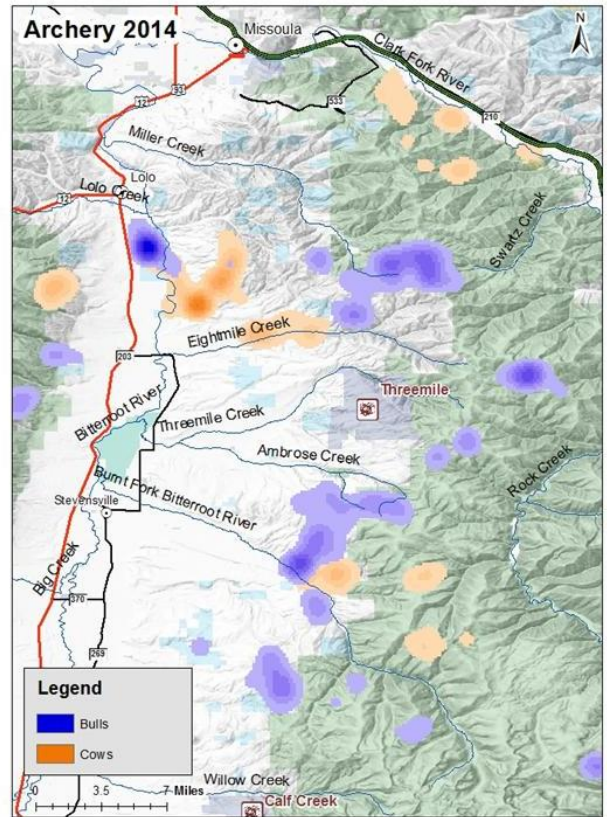
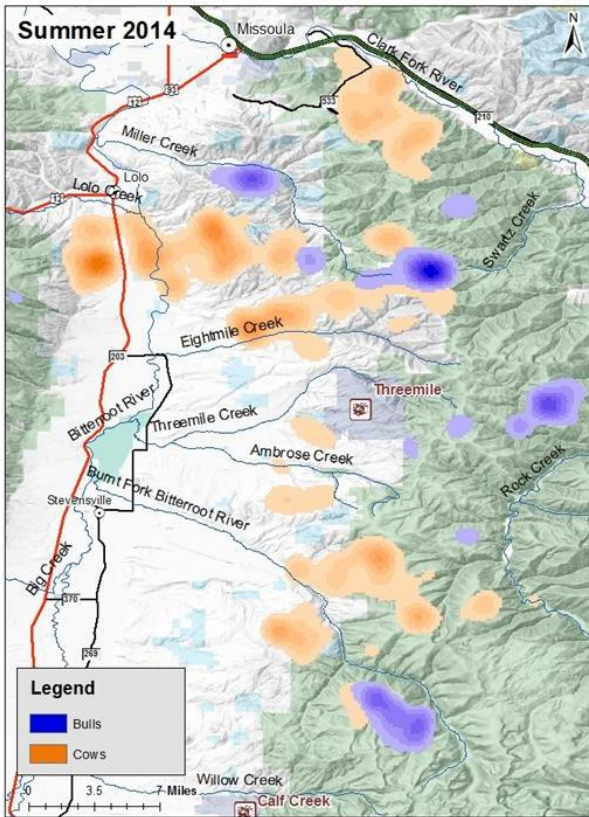
**Figure 1. Capture locations of 48 female (yellow) and 28 bull elk (purple) in the north Sapphire area during February 2014 (triangles) and February 2015 (circles).**



**Figure 2. Percent of 2014 bull and female elk radiocollar locations that occurred on land that was accessible to the public.**

Six radiocollared elk crossed Highway 93 between Lolo and Carlton Creek from February 2014 to February 2015. We documented 37 highway crossings, with each individual elk crossing the highway between 6 and 14 times. Most highway crossings occurred at night between October and February; however, one radiocollared, adult female elk crossed the highway 2 times in July. All 4 of the female elk initially captured west of Highway 93 crossed to the east side of the highway, and 2 younger bulls captured east of Highway 93 crossed to the west. The female elk remained on the east side of the highway for periods ranging from  $\frac{1}{2}$  hour to 7 days before returning to the west side of the highway. A 3-year-old bull elk, captured near Davis Creek, crossed from the east to west side of the highway on May 20, 2014 and remained on the west side until he was harvested in November. A second 3-yr-old bull crossed from the east to the west side of the highway on April 20, 2015 and returned to the east side of the highway 9 days later. None of the female elk that were captured on the east side of the highway have crossed the highway.





**Figure 3. Adult female (orange) and bull (blue) elk locations by season. Seasons were defined as summer (June - August), Archery Season, Rifle Season, and winter (December - April).**

### **Elk Habitat and Vegetation Monitoring**

During summer 2014, we initiated fieldwork to evaluate elk forage availability and quality across the study area. The goal of the vegetation sampling is to develop a spatially-explicit, landscape-level estimate of late-summer elk nutritional resources. During late summer, forage quality is important to elk because of its influence on the probability of pregnancy and overwinter survival.

During July and August 2014, we collected vegetation data at 261 locations and we collected elk fecal pellet samples bi-weekly throughout the growing season. Additional information regarding the 2014 elk habitat and vegetation monitoring was included in the Fall 2014 progress report. The 2015 vegetation and fecal pellet sampling began in May 2015 and will end in September 2015.

### **Acknowledgements**

We thank the landowners that have allowed access for fieldwork and provided logistical support. We also thank the organizations and individuals that have provided financial support for this project: Ecosystem Research Group, Montana Department of Transportation, Montana Department of Fish, Wildlife and Parks, Montana's Outdoor Legacy Foundation, MPG Ranch, Ravalli County Fish and Wildlife Association, Rocky Mountain Elk Foundation, Roseburg Forest Product Company, Burnt Fork Ranch, Missoula Community Foundation, First Security Bank of Missoula, North Sapphire Hunter Opportunity Working Group and Sun Mountain Lumber. Additional funding was provided by revenues from the sale of Montana hunting and fishing licenses and matching Federal Aid in Wildlife Restoration grants to Montana Fish, Wildlife and Parks.